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| TRANSMITTAL LETTER OF THE UNITED STATES<br>DESIGNATED/ELECTED OFFICE (DO/EO/US)<br>CONCERNING A FILING UNDER 35 U.S.C. 371   |   | Attorney Docket No. <b>4001-1026</b>              |
|  |   | U.S. Application No. <b>10/089554</b>             |
| INTERNATIONAL APPLN. NO.<br><b>PCT/DE00/02644</b>  | INTERNATIONAL FILING DATE<br><b>8 AUGUST 2000</b> | PRIORITY DATE CLAIMED<br><b>30 SEPTEMBER 1999</b> |
| TITLE OF INVENTION: <b>METHOD AND APPARATUS FOR SORTING ITEMS OF MAIL</b>  |   |   |
| APPLICANT(S) FOR DE/EO/US: <b>THOMAS BAYER</b>   |   |   |
| Applicant herewith submits to the United States Designated Elected Office (DO/EO/US) the following items and other information:  |   |   |
| <ol style="list-style-type: none"> <li>1. <input checked="" type="checkbox"/> This is a FIRST submission of items concerning a filing under 35 U.S.C. 371.</li> <li>2. <input type="checkbox"/> This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371.</li> <li>3. <input checked="" type="checkbox"/> This is an express request to begin national examination procedures (35 U.S.C. 371(f)).<br/>The submission must include items (5), (6), (9) and (21) indicated below.</li> <li>4. <input checked="" type="checkbox"/> The US has been elected by the expiration of 19 months from the priority date (Article 31).</li> <li>5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371 (c)(2)) <ol style="list-style-type: none"> <li>a. <input checked="" type="checkbox"/> is attached hereto (required only if not communicated by the International Bureau)</li> <li>b. <input type="checkbox"/> has been communicated by the International Bureau. See attached PCT/IB/308.</li> <li>c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US).</li> </ol> </li> <li><input checked="" type="checkbox"/> An English language translation of the International Application as filed (35 U.S.C. 371 (c)(2)) <ol style="list-style-type: none"> <li>a. <input checked="" type="checkbox"/> is attached hereto.</li> <li>b. <input type="checkbox"/> has been previously submitted under 35 U.S.C. 154(d)(4).</li> </ol> </li> <li><input type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3)) <ol style="list-style-type: none"> <li>a. <input type="checkbox"/> are attached hereto (required only if not communicated by the International Bureau).</li> <li>b. <input type="checkbox"/> have been communicated by the International Bureau.</li> <li>c. <input type="checkbox"/> have not been made, however, the time limit for making such amendments has NOT expired.</li> <li>d. <input type="checkbox"/> have not been made and will not be made.</li> </ol> </li> <li><input type="checkbox"/> An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371 (c)(3)).</li> <li><input checked="" type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).</li> <li><input type="checkbox"/> An English language translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).</li> </ol> |   |   |
| <b>Items 11 to 20 below concern document(s) or information included:</b>   |   |   |
| <ol style="list-style-type: none"> <li>11. <input checked="" type="checkbox"/> Information Disclosure Statement (IDS) w/PTO-1449 - <input checked="" type="checkbox"/> Copy of IDS citations</li> <li>12. <input checked="" type="checkbox"/> Assignment Papers (cover sheet &amp; document(s))</li> <li>13. <input checked="" type="checkbox"/> A FIRST Preliminary Amendment.</li> <li>14. <input type="checkbox"/> A SECOND or SUBSEQUENT Preliminary Amendment.</li> <li>15. <input type="checkbox"/> A substitute specification.</li> <li>16. <input type="checkbox"/> A change of power of attorney and/or address letter.</li> <li>17. <input type="checkbox"/> A computer-readable form of the sequence listing in accordance with PCT Rule</li> <li>18. <input type="checkbox"/> A second copy of the published international application under 35 U.S.C. 154(d)(4).</li> <li>19. <input type="checkbox"/> A second copy of the English language translation of the international application (35 U.S.C. 154(d)(4)).</li> <li>20. <input checked="" type="checkbox"/> Other items or information: <b>Abstract on a separate sheet, Application Data Sheet, PCT Request (PCT/RO/101), International Search Report (PCT/ISA/210), International Preliminary Examination Report (PCT/IPEA/409), Cover page of International Publication</b></li> </ol>   |   |   |

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| U.S. APPLICATION NO. <b>10/089554</b> INTERNATIONAL APPLN. NO. PCT/DE00/02644  |                     | ATTORNEY DOCKET NO. 4001-1026   |                                      |
| 21. <input checked="" type="checkbox"/> The following fees are submitted:<br><br><b>BASIC NATIONAL FEE (37 CFR 1.492 (a) (1)-(5):</b><br><br>Neither international preliminary examination fee nor international search fee paid to USPTO and international Search Report not prepared by the EPO or JPO .....\$1040.00<br><br>International preliminary examination fee not paid to USPTO but International Search Report prepared by the EPO or JPO .....\$890.00<br><br>International preliminary examination fee not paid to USPTO but International search fee paid to USPTO .....\$740.00<br><br>International preliminary examination fee paid to USPTO but all claims did not satisfy provision of PCT Article 33 (1)-(4).....\$710.00<br><br>International preliminary examination fee paid to USPTO and all claims satisfied provision of PCT Article 33 (1)-(4).....\$100.00<br><br><b>ENTER APPROPRIATE BASIC FEE AMOUNT</b> |                     |   | <b>CALCULATIONS<br/>PTO USE ONLY</b> |
|  |                     |   | \$ 890.00                            |
| Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20- <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(e))  |                     |   | \$                                   |
| <b>CLAIMS</b>  | <b>NUMBER FILED</b> | <b>NUMBER EXTRA</b>   | <b>RATE</b>                          |
| Total Claims   | 7 - 20 =            |   | X \$18.00                            |
| Independent Claims   | 1 - 3 =             |   | X \$84.00                            |
| MULTIPLE DEPEND CLAIM(S) (if applicable)   |                     |   | + \$280.00                           |
| <b>TOTAL OF ABOVE CALCULATION -</b>  |                     |   | <b>\$ 890.00</b>                     |
| <input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2.   |                     |   | +                                    |
| <b>SUBTOTAL =</b>  |                     |   | <b>\$ 890.00</b>                     |
| Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492Z(f)).  |                     |   | \$                                   |
| <b>TOTAL NATIONAL FEE =</b>  |                     |   | <b>\$ 890.00</b>                     |
| Fee for recording the enclosed assigned (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) \$40.00 per property +  |                     |   | \$ 40.00                             |
| <b>TOTAL FEES ENCLOSED -</b>   |                     |   | <b>\$ 930.00</b>                     |
|  |                     |   | Amount to be refunded:               |
|  |                     |   | \$                                   |
|  |                     |   | Charged:                             |
|  |                     |   | \$                                   |
| <input checked="" type="checkbox"/> A Check in the amount of <b>\$930.00</b> to cover all fees is attached.<br><br><input type="checkbox"/> The Commissioner is hereby authorized to charge indicated fees and credit any overpayments to Deposit account No. 25-0120 in the name of Young & Thompson, as described below. A duplicate copy of this sheet is enclosed.<br><br><input checked="" type="checkbox"/> The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fee required under 37 C.F.R. §§ 1.16 or 1.17.   |                     |   |                                      |
| SEND ALL CORRESPONDENCE TO:<br>745 South 23 <sup>rd</sup> Street<br>Arlington, VA 22202<br>Telephone (703) 521-2297<br>Y&T Customer No. 000466   |                     | <div style="text-align: center;"> <br/> <b>00466</b><br/> <small>PATENT TRADEMARK OFFICE</small> </div> <div style="text-align: right;"> <b>SIGNATURE</b> <u>Benoit Castel</u><br/> <b>NAME</b> Benoit Castel<br/> <b>REGISTRATION NO.</b> 35,041         </div> |                                      |
| BC/lmt<br>Date: <b>1 April 2002</b>  |                     |   |                                      |

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JC13 Rec'd PCT/PTO 0 1 APR 2002

PATENT  
4001-1026

**IN THE U.S. PATENT AND TRADEMARK OFFICE**

In re application of: Thomas BAYER

Appl. No.: **NEW NATIONAL PHASE  
APPLICATION IN THE  
UNITED STATES** Group:

Filed: April 1, 2002 Examiner:

For: METHOD AND APPARATUS FOR  
SORTING ITEMS OF MAIL

**PRELIMINARY AMENDMENT**

Assistant Commissioner for Patents  
Washington, DC 20231

April 1, 2002

Sir:

Prior to the first Official Action and calculation of the filing fee, the following preliminary amendments and remarks are respectfully submitted in connection with the above-identified application.

**IN THE CLAIMS:**

Please amend the claims as follows:

--3. (amended) The method as claimed in claim 1, characterized in that the contents of the database sections are stored in memories which are fitted to the relevant containers (16) and which can be written to and read from, said memories being read out before the items of mail are put into the sorting machines for the second and further sorting passes and being put into the control systems of these sorting machines.--

--4. (amended) The method as claimed in claim 1, characterized in that the relevant database contents are transmitted electronically to the sorting machines carrying out the second and further sorting passes.--

Please add the following claims:

--6. (new) The method as claimed in claim 2, characterized in that the contents of the database sections are stored in memories which are fitted to the relevant containers (16) and which can be written to and read from, said memories being read out before the items of mail are put into the sorting machines for the second and further sorting passes and being put into the control systems of these sorting machines.--

--7. (new) The method as claimed in claim 2, characterized in that the relevant database contents are transmitted electronically to the sorting machines carrying out the second and further sorting passes.--

REMARKS

Claims 6 and 7 have been added.

Claims 3 and 4 have been amended to eliminate multiple dependencies.

Entry of the above amendments is earnestly solicited. An early and favorable first action on the merits is earnestly requested.

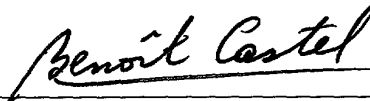
Should there be any matters that need to be resolved in the present application, the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "VERSION WITH MARKINGS TO SHOW CHANGES MADE."

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

YOUNG & THOMPSON



Benoit Castel, Reg. No. 35,041

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Arlington, VA 22202  
Telephone (703) 521-2297

BC/lmt  
Attachments

**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

IN THE CLAIMS:

The claims have been amended as follows:

--3. (amended) The method as claimed in claim 1~~or 2~~, characterized in that the contents of the database sections are stored in memories which are fitted to the relevant containers (16) and which can be written to and read from, said memories being read out before the items of mail are put into the sorting machines for the second and further sorting passes and being put into the control systems of these sorting machines.--

--4. (amended) The method as claimed in claim 1~~or 2~~, characterized in that the relevant database contents are transmitted electronically to the sorting machines carrying out the second and further sorting passes.--

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stored in a database together with the sorting information, so that the latter can be derived via the code from the database in subsequent sorting passes.

5 However, the application of this code is not feasible in all post sorting applications; in particular in applications for the sorting of in-house post, this is not possible, since a large part of the items of mail - internal mail envelopes - are used repeatedly with  
10 different recipient addresses. In this connection, a solution for the temporary storage of objects, such as letters or the like, in a reading system is known, in which discriminating features are additionally determined from the objects to be read before the  
15 temporary storage and, assigned to the relevant reading results, are stored in a database (DE 40 00 603 C2). When the objects leave the intermediate store again, the information to be detected is not read again, instead the discriminating features (fingerprints, as  
20 they are known) are recorded, compared with the stored features and, in the event of agreement between the features and a stored feature set, the associated reading result is assigned to the respective object.

The application of this method to real sorting  
25 processes is generally extremely difficult, however, since here an item of mail from a very large quantity has to be recognized again reliably, for example from several 100 000 objects. Furthermore, the scanned images from two different letters are in the extreme  
30 case distinguished only by a few pixels (if this is information post, and the addresses are distinguished only in one letter of the forename); on the other hand, two image recordings from the same object may differ by considerably more pixels.



The object of the invention is, therefore, in the case of multi-stage sorting processes, to avoid repeatedly reading the addresses of each item of mail and printing  
5 on machine-readable identification codes, by the items of mail being identified by means of a comparison of features of as few items of mail as possible during the subsequent sorting passes.

10 According to the invention, the object is achieved by the teaching specified in claim 1 and 5. As a result of building up a database in which, for each item of mail, in addition to the distribution information/distribution code read and the feature  
15 sets, the order of reading the distribution information and the associated sorting endpoint number and/or the number of the container in which the item of mail is stored in this sorting pass is contained, it is possible to subdivide the database into sections  
20 associated with the containers. In the database sections, the data are ordered in accordance with the order of reading. During the second or subsequent sorting pass, the items of mail from each container of the previous sorting pass are input again into this or  
25 another sorting machine in the order in which they were stored in the container. With the reporting of the endpoint or container number, the corresponding database sections which are needed for the current identification are identified. Because of the defined  
30 and known order of the items of mail only a comparison of the parameter sets from at least n items of mail, where  $n$  = the maximum multiple delivery rate to be expected, is needed in order to identify the items of mail and the distribution code. This is carried out by

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the parameter set of the first item of mail being compared with the first n parameter sets of the relevant database section, the parameter set of the second item of mail being compared with n parameter  
5 sets arranged one after another, beginning with the parameter set of the second item of mail, and so on. Since only one comparison between few parameter sets has to be carried out, the result is significantly more secure with a lower outlay.

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Advantageous refinements of the invention are presented in the subclaims.

If the containers belonging to a specific sorting  
15 endpoint and filled with items of mail are not identified in accordance with the sequence in which they are filled, then, advantageously, the last item of mail before or the first item of mail after each sorting endpoint emptying is additionally identified in  
20 the database. In order to determine the database section that is relevant for the respective container, the feature set of the first item of mail of each container from this sorting endpoint is then compared with the first feature sets of the database sections  
25 that are associated with this sorting endpoint but has not yet been processed in this sorting path, until agreement is determined.

It is also advantageous, in particular when  
30 implementing the second and further sorting runs on other sorting machines than on the sorting machine of the first sorting pass, to store the contents of the database section in memories which can be read in and out are fitted to the relevant containers, which are

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read out before the items of mail are put into the sorting machines for the second and further sorting passes and are put into the control systems of these sorting machines.

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A further advantageous embodiment in this connection is the electronic transfer of the relevant database contents to the sorting machines carrying out the second and further sorting sequences.

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The invention will be explained in more detail below in an exemplary embodiment and using the drawing, in which:

FIG 1 shows a schematic representation of the sequence during the first sorting pass

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FIG 2 shows a schematic representation of the following database processing

FIG 3 shows a schematic representation of the sequence during the  $i$ th sorting pass ( $i > 1$ ).

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The sorting machine has, as sorting endpoints, sorting bins 14, which have to be emptied at a specific level. During the first sorting pass, the addresses of the items of mail and therefore the distribution code are read 11, either automatically by an address reader or manually by video encoding staff. In order to enable access simply to this information in following sorting passes, in parallel with the reading process, a database is built up 12, which contains data sets 13 for items of mail for characteristic features relating to all items of mail that have been processed. In detail, the data set 13 of an item of mail contains:

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- the feature set/fingerprint features

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- the distribution code
- the sorting bin number j and/or the number of the container 16 for temporary storage, into which the item of mail has been sorted
- 5 - the time at which an item of mail was read
- a marking as to whether the item of mail represents the last object in a container as a temporary store.

The first input is used for the reidentification of an  
10 item of mail in subsequent sorting passes, the second  
input contains the distribution code for this item of  
mail. The remaining inputs permit a reduction in the  
quantity of items of mail for the subsequent  
reidentification.

15

The fingerprint features take into account two  
different aspects, firstly characteristics of letterbox  
post, and secondly the characteristics of post from  
large distributors. Letterbox post may in most cases  
20 already be distinguished by the geometric dimensions  
and simple global image features. In the case of large  
distributors, the letters are distinguished only in  
terms of the address, the dimensions and layout are  
identical for all the items of mail. Consequently, two  
25 different feature structures are calculated and stored  
in relation to an item of mail:

- Holistic features of the item of mail, such as height, width, grey value distribution on a scanned image of the item of mail, position of the  
30 recipient's address, etc.
- Features of the recipient's address: number of lines, number of words in a line, number of characters in a line, etc.

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The sorting machine distributes each item of mail supplied to it into a sorting bin 14. As a rule, the buffer capacity of a sorting bin 14 is not sufficient for the items of mail to be processed in one sorting path, so that the items of mail have to be stored temporarily in containers 16, for example in troughs, before these can be supplied to a subsequent sorting process. When transferring the items of mail from a sorting bin 14 into a temporary store 16, the order of the items of mail must be maintained. Furthermore, for each container 16 the information must be available as to which items of mail correspond to which sorting bin 14 which contains them. For example, the correspondence between container and sorting bin number can be produced by means of an attached docket (plain text or bar code), which is fixed to the container. Furthermore, a card can optionally be inserted into each container 16 - at the start or at the end - (identified by start in FIG 1), which may simply be identified automatically in a subsequent sorting pass. It is beneficial (but not necessary) for the order in the container (or of the filling) is known, so that this information can be used for the subsequent sorting pass.

In addition to the features and the sorting code, the time at which an item of mail was read in the sorting machine is stored in the database 10 and also the sorting bin 14 and/or container 16 to which this item of mail has passed for temporary storage. In addition, the sorting machine reports to the database 10, via the machine control system, the time and the sorting bin number at which this sorting bin 14 has been emptied. However, this information is only necessary when the order of the containers 16 for the temporary

storage for a sorting bin 14 cannot be recorded for the subsequent sorting pass.

After a complete sorting pass, the database 10 contains  
5 all the items of mail in the chronological order in  
which they were supplied to the sorting machine. The  
database objects are then resorted 21 in accordance  
with the sorting bin 14 (primary key) and, within a  
bin, in accordance with the time (secondary key) at  
10 which the distribution address was read. Furthermore,  
the database inputs from a sorting bin 14 are marked in  
the transition element 22, whose time stamp corresponds  
with the time at which a bin content was emptied into a  
container 16, if this information has been stored  
15 during the first pass. This marking consequently  
subdivides the amount of items of mail from one sorting  
bin 14 into a number of part amounts which corresponds  
exactly to the number of containers 16 set up for  
temporary storage.  
20 The database 10 is then distributed to the sorting  
machines on which the items of mail are sorted again.  
It is beneficial not to transmit the complete database  
10 but only the database regions which correspond to  
the items of mail which are processed there.  
25  
In the sorting passes 2 and thereafter (FIG 3), the  
items of mail from the containers 16 are supplied to  
the sorting machine in a predefined order with respect  
to the sorting bin number. The sequence of the bin  
30 numbers, and therefore the order of supplying the  
containers, can be equated with the order of the data  
sets in the database 10 in different ways:

- The order of the sorting bin numbers is predefined by the control computer via the user interface.
  - The operating staff input the number via an input field.
- 5    - The number is input with a reading unit via a bar code (docket accompanying the container).

As a result of the input 32 of the sorting bin number j, the corresponding database group 34 is selected 33.

10   The determination of the database section which corresponds with the items of mail supplied to the respective container 16 for the sorting bin j requires closer consideration. Three cases are distinguished:

- 15   1. The sorting bin j was stored in precisely one container.
2. The sorting bin j was stored in m containers. The order of these m containers correspond to the order in which they were filled.
- 20   3. The sorting bin j was stored in m containers. The order of these m containers does not correspond to the order in which they were filled.

In the first case, the database section corresponding to this container is identical to the selected database group. In the second case, the order of the items of mail supplied likewise corresponds to the order of the items of mail in the database 10.

If the containers 16 are not supplied in the original order - the third case - the database section which corresponds to the content of the current container 16 must be determined. In this case, the information in the "transfer" field and, optionally, the start card belonging to each container are used for this sorting

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bin. The start card indicates that a new container 16 begins and, therefore, in turn a corresponding database section must be determined. Since, by means of the "transition" element, the amount of items of mail in the sorting bin 14 has been divided into exactly as many parts as containers 16 have been provided, it is possible to use for the selection the first n=5 items of mail from each part amount which have not yet been processed. The current item of mail therefore has to be compared with all these objects and checked for correspondence. The part amount forms the corresponding database section, whose starting object has a fingerprint identical to the current image of the item of mail.

The distribution code of an item of mail to be sorted is determined by comparing the fingerprint 35 with the five first database entries of the relevant database section. Each time there is successful correspondence, from this point on the next five database entries are compared with the next image of an item of mail. The number of the amount of items of mail selected, five in this case, must be greater than the maximum multiple delivery rate to be expected.

In each sorting pass, the database 10 is brought to the most recent state 36 if sorting subsequently has to be continued. For this purpose, for each object processed, the elements "bin number" and "time 2" are provided with the appropriate new values. Likewise, the "transition" element is deleted, and the bin emptying data set is overwritten, if both are in use. Before the database 10 is resorted for the subsequent sorting pass



21 and 22, the contents of the two fields "time 1" and "time 2" are interchanged at 23.

As an alternative to the proposed central database solution, the storage of the fingerprint features and of the distribution code can likewise be carried out via electronic memory modules, which are fixed directly to the containers 16, and therefore make this data available decentrally, exactly at the point at which it is needed. For example, stickers with semiconductor memories can be used which, after the container 16 has been filled, are loaded with the information relating to the fingerprint features and the distribution code and are fixed directly to this container 16. During subsequent sorting passes, the content of the sticker is read out before it is fed into the sorting machine, and the fingerprint comparison 35 is carried out. The beginning of this stack is detected via the start card.

Patent claims

1. A method of sorting items of mail by means of  
sorting machines with sorting endpoints, which  
5 comprise sorting bins (14) or replaceable  
containers (16), in multiple sorting passes, the  
surface of the item of mail with the distribution  
address being recorded and the latter read during  
each first sorting pass,  
10 characterized in that
- during the first sorting pass, characteristic  
features of the item of mail and/or features of  
the address are additionally determined for each  
item of mail as a set of features for  
15 distinguishing at least n items of mail, where  
n = the maximum multiple delivery rate to be  
expected,
  - when a defined level is reached in each sorting  
endpoint, the container (16) is changed or the  
20 sorting bin (14) is emptied and the items of mail  
emptied out are stored temporarily in containers  
(16) while maintaining their order, the  
containers (16) being identified at least with  
the sorting endpoint number,
  - 25 - for each item of mail, the order of reading the  
distribution address, the associated sorting  
endpoint number and/or the number of the  
container (16) in which the item of mail is  
stored in this sorting pass, the distribution  
30 code determined from the address read and the  
characteristic feature set are stored in a  
database (10),
  - in the second and each further sorting pass, the  
items of mail from each container (16) from the

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respective previous sorting pass are put into  
this or another sorting machine in the order in  
which they were stored in the container (16), the  
associated endpoint or container number is  
5 reported to the sorting machine and therefore  
the database section relevant to the respective  
container (16) is determined, the data in each  
database section being ordered in accordance with  
the order of reading the distribution address,  
10 for each item of mail the defined characteristic  
feature set is determined, with the aid of which  
the respective distribution code is then  
determined, by the characteristic feature set of  
the first item of mail being compared with n  
15 characteristic feature sets stored one after  
another in this database section, beginning with  
the feature set of the first item of mail, and,  
if there is agreement within a defined range, the  
associated stored distribution code being  
20 assigned to the first item of mail, by the  
characteristic feature set of the second item of  
mail being compared with n characteristic feature  
sets stored one after another in this database  
section, beginning with the feature set of the  
25 second item of mail, and, if there is agreement,  
the stored distribution code for this feature set  
being assigned to the second item of mail, and  
this procedure is repeated until the feature sets  
of all the items of mail supplied have been  
30 compared with the associated stored feature sets.

2. The method as claimed in claim 1, characterized in  
that if the order of the containers (16) belonging  
to a sorting endpoint has not been identified, in

order to detect the transition from one container (16) to the other, in addition the respective last item of mail before or the first item of mail after each sorting endpoint emptying is identified in the database (10), and the feature set of the first item of mail of each container (16) of one sorting endpoint in each case is compared with the first n feature sets of the database sections associated with this sorting endpoint but not yet processed in this sorting pass until agreement, and therefore the database section associated with the items of mail in this container (16), have been determined.

3. The method as claimed in claim 1 or 2, characterized in that the contents of the database sections are stored in memories which are fitted to the relevant containers (16) and which can be written to and read from, said memories being read out before the items of mail are put into the sorting machines for the second and further sorting passes and being put into the control systems of these sorting machines.
4. The method as claimed in claim 1 or 2, characterized in that the relevant database contents are transmitted electronically to the sorting machines carrying out the second and further sorting passes.
5. An apparatus for implementing the method as claimed in claim 1.

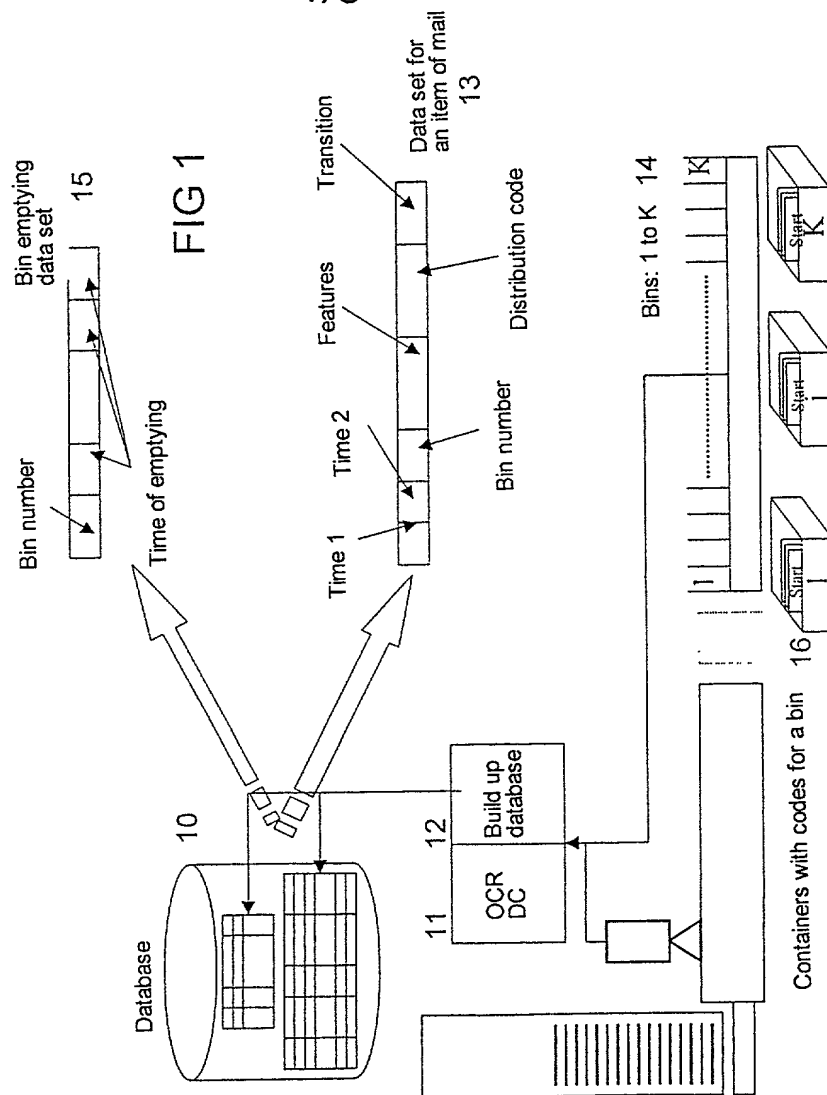
## Abstract

### Method and apparatus for sorting items of mail

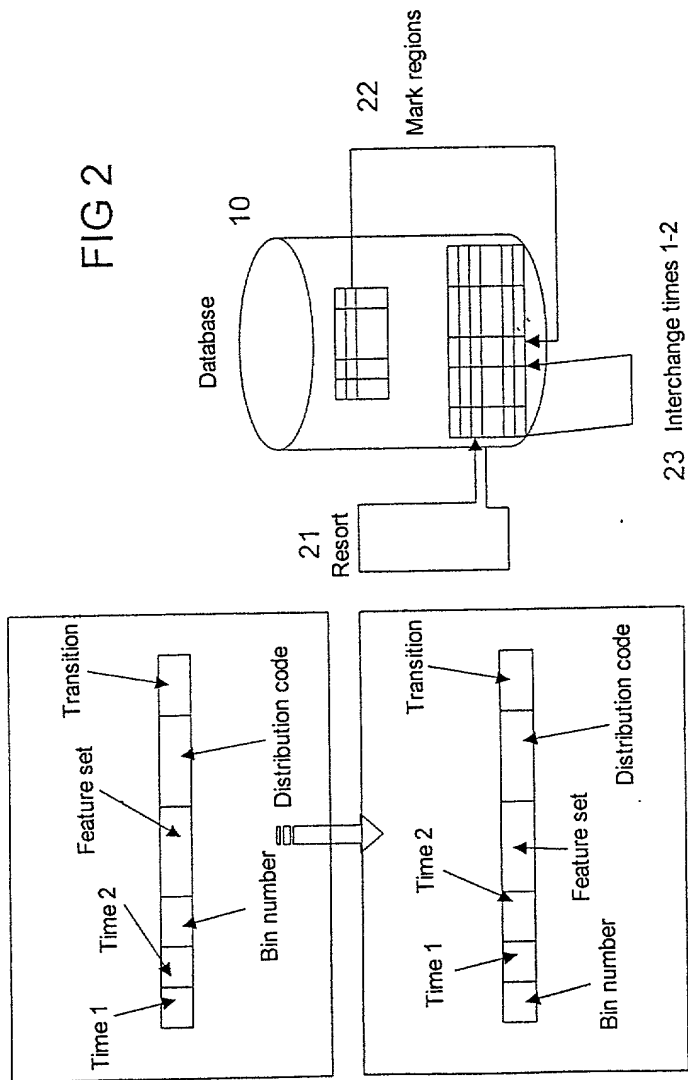
The invention relates to sorting items of mail in a plurality of sorting passes. In order not to have to read the address in each sorting pass and also not to have to print any machine-readable identification code on each item of mail, features characteristic of the items of mail are additionally determined during the first sorting pass and are stored together with distribution codes determined in the reading process. During the subsequent sorting passes only the characteristic features of the items of mail are measured and compared with the stored features. In the event of agreement, the item of mail is assigned the associated distribution code. A particular feed regime with defined orders ensures that in each case only  $n$  items of mail have to be compared, where  $n$  = maximum multiple delivery rate to be expected.

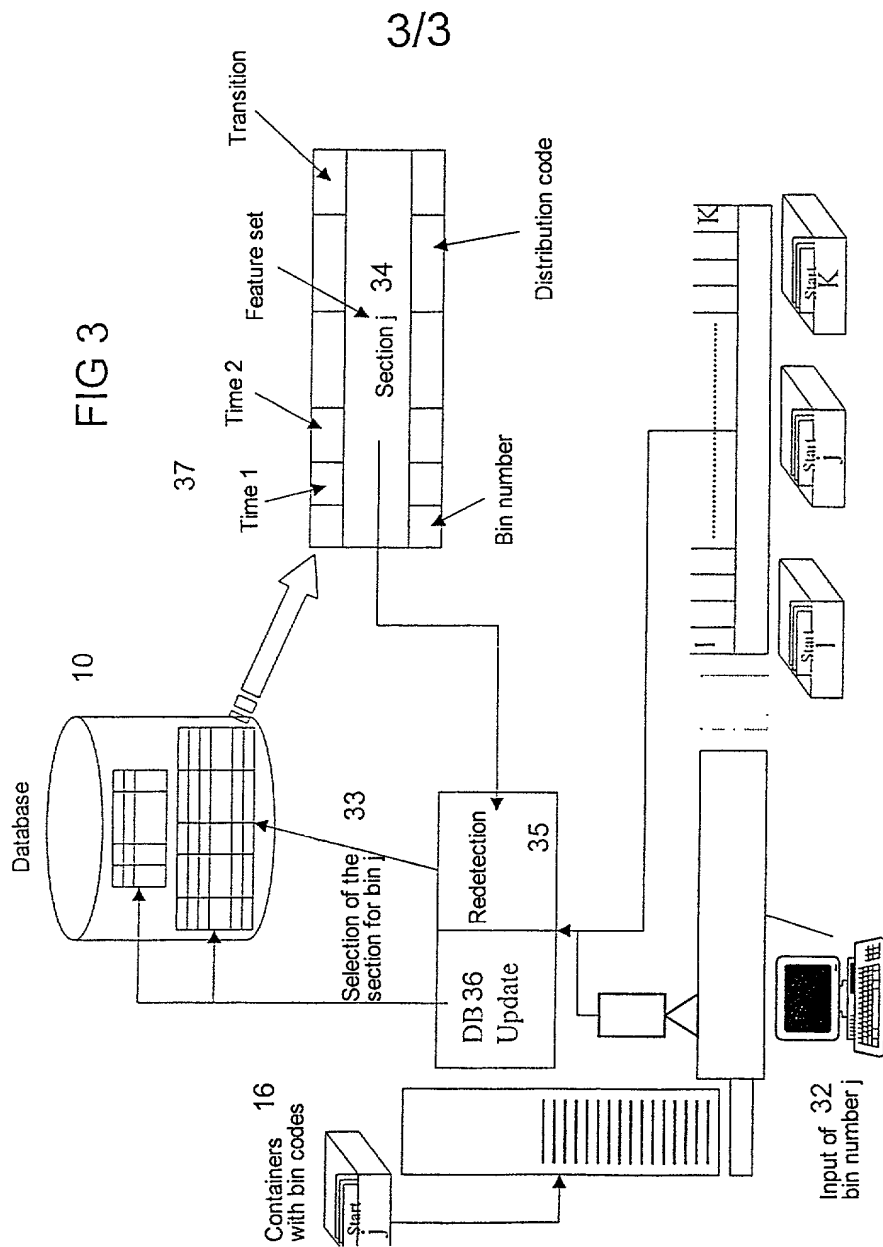
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# Declaration and Power of Attorney For Patent Application

## Erklärung Für Patentanmeldungen Mit Vollmacht

### German Language Declaration

Attorney Docket 4001-1026

Als nachstehend benannter Erfinder erkläre ich hiermit an Eides Statt:

dass mein Wohnsitz, meine Postanschrift, und meine Staatsangehörigkeit den im Nachstehenden nach meinem Namen aufgeführten Angaben entsprechen,

dass ich, nach bestem Wissen der ursprüngliche, erste und alleinige Erfinder (falls nachstehend nur ein Name angegeben ist) oder ein ursprünglicher, erster und Miterfinder (falls nachstehend mehrere Namen aufgeführt sind) des Gegenstandes bin, für den dieser Antrag gestellt wird und für den ein Patent beantragt wird für die Erfindung mit dem Titel:

#### Verfahren und Vorrichtung zum Sortieren von Sendungen

deren Beschreibung

(zutreffendes ankreuzen)

☐ hier beigefügt ist.

☒ am 08.08.2000 als

PCT internationale Anmeldung

PCT Anwendungsnummer

PCT/DE00/02644

eingereicht wurde und am \_\_\_\_\_

abgeändert wurde (falls tatsächlich abgeändert).

Ich bestätige hiermit, dass ich den Inhalt der obigen Patentanmeldung einschliesslich der Ansprüche durchgesehen und verstanden habe, die eventuell durch einen Zusatzantrag wie oben erwähnt abgeändert wurde.

Ich erkenne meine Pflicht zur Offenbarung irgendwelcher Informationen, die für die Prüfung der vorliegenden Anmeldung in Einklang mit Absatz 37, Bundesgesetzbuch, Paragraph 1.56(a) von Wichtigkeit sind, an.

Ich beanspruche hiermit ausländische Prioritätsvorteile gemäss Abschnitt 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 119 aller unten angegebenen Auslandsanmeldungen für ein Patent oder eine Erfindersurkunde, und habe auch alle Auslandsanmeldungen für ein Patent oder eine Erfindersurkunde nachstehend gekennzeichnet, die ein Anmeldedatum haben, das vor dem Anmeldedatum der Anmeldung liegt, für die Priorität beansprucht wird.

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

#### Verfahren und Vorrichtung zum Sortieren von Sendungen

the specification of which

(check one)

☐ is attached hereto.

☒ was filed on 08.08.2000 as

PCT international application

PCT Application No. PCT/DE00/02644

and was amended on \_\_\_\_\_ (if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

# German Language Declaration

Attorney Docket 4001-1026

Prior foreign applications  
Priorität beansprucht

Priority Claimed

199 47 259.9

DE

30.09.1999

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☐

(Number)  
(Nummer)

(Country)  
(Land)

(Day Month Year Filed)  
(Tag Monat Jahr eingereicht)

Yes  
Ja

No  
Nein

(Number)  
(Nummer)

(Country)  
(Land)

(Day Month Year Filed)  
(Tag Monat Jahr eingereicht)

☐  
Yes  
Ja

☐  
No  
Nein

(Number)  
(Nummer)

(Country)  
(Land)

(Day Month Year Filed)  
(Tag Monat Jahr eingereicht)

☐  
Yes  
Ja

☐  
No  
Nein

Ich beanspruche hiermit gemäss Absatz 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 120, den Vorzug aller unten aufgeführten Anmeldungen und falls der Gegenstand aus jedem Anspruch dieser Anmeldung nicht in einer früheren amerikanischen Patentanmeldung laut dem ersten Paragraphen des Absatzes 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 122 offenbart ist, erkenne ich gemäss Absatz 37, Bundesgesetzbuch, Paragraph 1.56(a) meine Pflicht zur Offenbarung von Informationen an, die zwischen dem Anmeldedatum der früheren Anmeldung und dem nationalen oder PCT internationalen Anmeldedatum dieser Anmeldung bekannt geworden sind.

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §122, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

PCT/DE00/02644

(Application Serial No.)  
(Anmeldeseriennummer)

08.08.2000

(Filing Date D, M, Y)  
(Anmeldedatum T, M, J)

anhängig

(Status)  
(patentiert, anhängig,  
aufgegeben)

pending

(Status)  
(patented, pending,  
abandoned)

(Application Serial No.)  
(Anmeldeseriennummer)

(Filing Date D,M,Y)  
(Anmeldedatum T, M; J)

(Status)  
(patentiert, anhängig,  
aufgeben)

(Status)  
(patented, pending,  
abandoned)

Ich erkläre hiermit, dass alle von mir in der vorliegenden Erklärung gemachten Angaben nach meinem besten Wissen und Gewissen der vollen Wahrheit entsprechen, und dass ich diese eidesstattliche Erklärung in Kenntnis dessen abgebe, dass wissentlich und vorsätzlich falsche Angaben gemäss Paragraph 1001, Absatz 18 der Zivilprozessordnung der Vereinigten Staaten von Amerika mit Geldstrafe belegt und/oder Gefängnis bestraft werden koennen, und dass derartig wissentlich und vorsätzlich falsche Angaben die Gültigkeit der vorliegenden Patentanmeldung oder eines darauf erteilten Patentes gefährden können.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

# German Language Declaration

Attorney Docket 4001-1026

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POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (list name and registration number)

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And I hereby appoint

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| Unterschrift des Erfinders                              | Datum   | Inventor's signature                 | Date    |
|   | 31.1.02 |                                      | 31.1.02 |
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|   |         |                                      |         |

(Bitte entsprechende Informationen und Unterschriften im Falle von dritten und weiteren Miterfindern angeben).

(Supply similar information and signature for third and subsequent joint inventors).

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